DOCUMENT RESUME

ED 062 042 RC 006 068

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TITLE	Rivalry in Anglo-American and Mexican Children of Two Ages.
INSTITUTION	California Univ., Los Angeles. Early Childhood Research Center.
SPONS AGENCY	Office of Economic Opportunity, Washington, D.C.
REPORT NO	OEO-CG9938
PUB DATE	Jun 71
NOTE	19p.
EDRS PRICE	MF-$0.65 HC-$3.29
DESCRIPTORS	*Affective Behavior; *Anglo Americans; Bibliographic Citations; *Children; *Cross Cultural Studies; Cultural Differences; Experiments; Interaction; *Mexicans; Rural Urban Differences; Statistical Analysis; Tables (Data)
IDENTIFIERS	*Mexicans

ABSTRACT

In this experiment designed to trace the development of rivalry in Anglo American and rural Mexican children, rivalry (behavior intended to lower the outcomes of a peer) was measured by 4 choice conditions wherein the rivalrous alternative in all conditions was the choice that left fewer rewards (marbles) to the chooser's peer. After all choices were made, the children could trade the marbles for toys. The conditions, designed to systematically vary absolute and relative outcomes, were presented to Anglo American and Mexican children of ages 5-6 and 8-10 from 2 settings: Los Angeles, California, and Nuevo San Vicente, Baja California, Mexico. Forty-eight children from each culture, 6 boy pairs and 6 girl pairs, participated as subjects. It was revealed that older children were significantly more rivalrous than younger children; Anglo children were significantly more rivalrous than Mexican children; and the cultural differences tended to increase with age. The effect of conditions was significant, indicating that for all groups rivalry was greatest when accompanied by both relative and absolute gains. The opportunity to avoid a small relative loss increased rivalry more than opportunity to accrue a small absolute gain. The development with age of greater rivalry in boys than girls was present for the Anglo but not Mexican children. (Author/NQ)

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RECEIVED
MAY 1 1972
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This work was supported through the UCLA Early Childhood Research Center, Dr. Carolyn Stern, Director. This Center is funded by Grant CG9938 from the Office of Economic Opportunity. June, 1971.

RC006068

Abstract

Rivalry, behavior intended to lower the outcomes of a peer, was measured by four choice conditions presented to Anglo-American and Mexican children of ages 5-6 and 8-10. Older children were significantly more rivalrous than younger children ($p < .001$); Anglo-American children were significantly more rivalrous than Mexican children ($p < .001$); and the cultural difference tended to increase with age. The effect of conditions was significant ($p < .001$) indicating that for all groups rivalry was greatest when accompanied by both relative and absolute gains. The opportunity to avoid a small relative loss increased rivalry more than opportunity to accrue a small absolute gain. The development with age of greater rivalry in boys than girls was present for the Anglo-American but not Mexican children.

RIVALRY IN ANGLO-AMERICAN AND MEXICAN CHILDREN OF TWO AGES[1]

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Cultural studies have demonstrated profound differences in the development of both competition (behavior intended to maximize own gains) and rivalry (behavior intended to minimize other's gains). Anglo-American children are more competitive than Mexican-American children who are in turn more competitive than Mexican rual children (Kagan & Madsen, 1971). Mexican rural children were also found to be less competitive than Afro-American, Anglo-American, and Mexican-Americans (Madsen & Shapira, 1970). Anglo-American children more often than the rural Mexicans take a toy from a peer and engage in protracted conflict designed to lower the peer's outcomes (Kagan & Madsen, In Press). In contrast to the striking differences observed between Anglo-American and Mexican children in rivalry, only a slight rivalry difference was observed between Anglo-American and Belgian children (McClintock & Nuttin, 1969).

In spite of the profound cultural differences, children in all of the above settings indicate a similar developmental trend: they become more competitive and rivalrous with increased age. American and Belgian 12 year olds are more rivalrous than eight year olds in a maximizing difference game (McClintock & Nuttin, 1969). Anglo-American and Mexican 7-9 year olds are more competitive than 4-5 year olds (Kagan & Madsen, 1971; Madsen, In Press). Although all of these studies indicate increasing competitiveness with age, age interacts differently with culture depending on the setting. The competition difference between Anglo-American and Mexican children tends to increase with age; the difference between American and Belgian children tends to decrease with age.

The present experiment was designed to trace the development of rivalry in Anglo-American and rural Mexican children from the same settings in which the marked competition differences have been observed. Although there is experimental data on the development of competition in Anglo-American and Mexican children and there is also experimental data on development of rivalry in Anglo-American and Belgian children, there is no developmental comparison of rivalry in Anglo-American and Mexican children. If rivalry were to develop in Anglo-American and rural Mexican children as does competition in those children, Anglo-American children would show greater non-adaptive rivalry with age and the cultural difference would tend to increase with age.

To assess rivalry in preschool children as well as older children, it was necessary to develop an experimental method which is conceptually simpler than the frequently used prisoner dilemma situation. Thus a set of simple choice cards was developed which is illustrated in Figure 1. In

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Insert Figure 1 about here

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the experimental situation a child sits facing his peer; between them is a choice card containing marbles. The chooser may take the marbles nearest him directly from either the right or left side of the choice card, and his peer is allowed to take the remaining marbles from the chosen side. For example, in Figure 1, Condition 1, if the chooser selects the right (rivalrous) side, he takes two marbles and leaves his peer one. If the subject selects the left (non-rivalrous) side, he takes three marbles and leaves three for his peer. The rivalrous alternative in all four conditions is the choice which leaves fewer rewards to the chooser's peer.

The four conditions were designed to systematically vary absolute and relative outcomes in order to estimate their effect on rivalry. Rivalry

in Condition 1 is irrational in terms of absolute outcomes. That is, the rivalrous alternative offers fewer rewards for the choosing child as well as for his peer. Conditions 2, 3, and 4 all differ from Condition 1 in ways designed to make rivalry more likely. Condition 2 is identical to Condition 1 except that the rivalrous alternative contains no loss in absolute outcome for the chooser. Condition 3 is identical to Condition 1 except that the non-rivalrous alternative contains a relative loss for the chooser (fewer marbles than his peer), rather than equality of outcome. Because the only difference between Conditions 1 and 2 is in absolute gain and the main difference between Conditions 1 and 3 is in relative gain, comparison of the amounts Conditions 2 and 3 differ from Condition 1 allows an inference as to the relative importance of absolute and relative outcomes. Conditions 1 and 3 differ also in that the non-rivalrous alternative in Condition 1 and not 3 offers equality of outcome. An independent estimate of preference for equality of outcome may be made, however, from Condition 4. Preference for equality of outcome is the only basis for choosing the non-rivalrous alternative in Condition 4 because the rivalrous response offers both a greater absolute and a greater relative outcome. Because the rivalrous alternative in only Condition 4 offers both absolute and relative gains, Condition 4 was predicted to produce the greatest amount of rivalry.

Method

Subjects. The Mexican children of the study live in the small rural town of Nuevo San Vicente, Population 800, located 88 kilometers south of Ensenada, Baja California. San Vicente is the site of previous research showing rural Mexican children to be less competitive and rivalrous than Anglo-American city children. The anglo-American children of the study

were enrolled in day care centers for families of lower economic status in Los Angeles, California. Forty-eight children from each culture, six boy pairs and six girl pairs at ages 5-6 and 8-10 participated in the experiment.

Apparatus and Procedure. Pairs were seated facing each other with a choice card on a table between them. The white cardboard choice cards (13 cm x 26 cm) had holes in which the experimenter placed marbles. The experimenter explained that the chooser would select either the right or left side of the card and then would place the marbles from his half of the selected alternative in his container and the marbles from his peer's half in his peer's container. (The chooser's outcomes are represented on the lower half of each card in Figure 1; the rivalrous alternative appears on the right.) The children were instructed that they could choose whichever alternative they preferred and that after all choices were made they could trade the marbles for toys from a large selection of ball point pens, bracelets, rings, whistles, magnets, magnifying glasses, and puzzles.

The first subject was presented with 16 choices; each condition four times, once in each of four trial blocks. After the first subject had completed his choices, the second subject, who had not previously been told that he would get to choose, received the same instructions and was presented with the alternatives in the same order. The orders of presentation were different for each pair within each Culture x Age x Sex block, but all such blocks received the same set of orders. The set of presentation orders was preselected randomly without replacement from all possible orders within the limits of counter-balancing of right-left and trial block positions. For each subject the right-left location of the rivalrous choice alternated over trials for each condition, appearing twice on the right and twice on the left. Within each trial block the right-left position of the rivalrous alternative was also balanced for each subject, occuring twice on each side.

Results

Data were analyzed by a 2 x 2 x 2 x 2 x 4 x 4 (culture x age x sex x subject order x condition x trial block) factorial analysis of variance. Because inspection revealed no significant effects due to stimulus position, that factor was not included in the analysis. Significance tests of predetermined condition means for Anglo-American and Mexican children were made with orthogonal t tests. All other simple effects were tested by the Tukey's HSD method. Tests of the significance of differences in numbers of subjects who were always and never rivalrous were performed by Chi square and Fisher tests. The factorial analysis is presented first.

Anglo-American children were significantly more rivalrous than Mexican children, $p < .001$ ($F1/80 = 16.02$). The direction of the cultural difference was the same in all four conditions. A significant culture x condition interaction, $p < .002$ ($F3/240 = 5.40$), indicated the cultural difference to be greater in the first three than the fourth condition. See Table 1.

Insert Table 1 about here

The main effect of conditions was signficant, $p < .001$ ($F3/240 = 48.98$). For all groups the effect of condition was in the same direction: behavior in Condition 4 was most rivalrous and behavior in Conditions 2 and 3 was more rivalrous than Condition 1. For almost all groups, the difference between Conditions 1 and 3 was greater than the difference between Conditions 1 and 2. Planned orthogonal t tests indicated Conditions 1 and 3 differed significantly for both Anglo-American ($p < .0005$) and Mexican ($p < .005$) children. The difference between Conditions 1 and 2, although in the predicted direction for all groups, did not reach statistical significance.

Boys were more rivalrous than girls only among the Anglo-American children in Condition 1. This culture x sex x condition interaction was significant, $p<.01$ ($F3/240 = 3.80$). The sex difference also approached significance for the Anglo-American children in Conditions 2 and 3. There were no significant sex differences for the Mexican children in any condition.

Older children in both cultures tended to be more rivalrous than their younger counterparts. The main effect due to age was significant, $p<.001$ ($F1/80 = 14.37$). A significant age x sex x condition interaction, $p<.001$ ($F3/240 = 6.37$), indicated that for the two age groups, conditions differentially effected the magnitude of sex differences. Among the younger children the sex difference reached significance only in Condition 3. Among the older children the sex difference reached significance only in Condition 2.

Subjects making their choices second were more rivalrous than the subjects preceeding them in all conditions, but the main effect due to subject order did not reach significance. Second subjects were significantly more rivalrous than first subjects only in Conditions 1 ($p<.01$) and 3 ($p<.02$). This subject order x condition interaction was significant, $p<.005$ ($F3/240 = 4.42$).

Always rivalrous. At both age levels in every condition except the fourth, more Anglo-American than Mexican children were always rivalrous. This cultural difference reached significance only in Conditions 1 ($p<.05$) and 2 ($p<.001$), Chi Square. See Table 2.

Insert Table 2 about here

More older children in both cultures in all conditions were always rivalrous than their younger counterparts. This age difference was significant only for Anglo-American children in Condition 2 ($p<.01$), Chi Square.

Among the older Anglo-American children, in every condition more boys than girls were always rivalrous. This sex difference reached significance in Conditions 1 ($p<.05$) and 2 ($p<.025$), Fisher test. No significant sex differences were observed among the Mexican or younger children.

Never rivalrous. In every condition more Mexican than Anglo-American children were never rivalrous. This cultural difference reached significance only in Condition 3 ($p<.001$), Chi Square. The tendency for more Mexican than Anglo-American children to be never rivalrous was true at both ages in all conditions with but two minor exceptions.

A few more younger than older children in both cultures were never rivalrous. This age difference reached marginal significance only for the Mexican children in Condition 2 ($p<.06$), Chi Square. Few Anglo-American children of either age were never rivalrous.

More Anglo-American girls than boys were never rivalrous in every condition except Condition 4. The tendency for girls to be less rivalrous than boys in the United States reached significance for the older children in Conditions 1 ($p<.05$) and 2 ($p<.05$), Fisher test. No consistent sex trends were observed for the Mexican children of either age.

Discussion

Condition 1 may be seen as a measure of irrational rivalry. The rivalrous response in that condition offers fewer rewards to the chooser as well as his peer and is irrational in terms of self interest. The results in Condition 1 are remarkably parallel to the results of previous

developmental studies of competition in Mexican and Anglo-American children: older children show more irrational behavior than younger children, Anglo-American children are more irrational than Mexican children, and the cultural difference tends to increase with age. That the cultural difference increases somewhat with age is a function of the greater increase in rivalry with age among the Anglo-American than Mexican children.

The significant cultural differences were observed in spite of an almost full range of individual differences within each culture. Considering all 16 presentations, in Mexico two children were always rivalrous and three children were never rivalrous. In the United States, eight children were always rivalrous and although no Anglo-American child was never rivalrous, one child was rivalrous only twice.

The cultural difference in rivalry is most easily seen by comparing the percentage of children always rivalrous. In Condition 1 few Mexicans of either age always took an absolute loss in order to be rivalrous. In Condition 2 few Mexicans were always rivalrous even when rivalry involved no loss in absolute gains. In contrast, with increasing age an increasing percent of Anglo-American children always acted to lower the outcomes of their peer and they were even willing to take a loss in absolute gains to do so. Rivalry for the Anglo-American child is a value for which he is willing to sacrifice.

Spontaneous comments of the children corresponded to their rivalrous behavior. Some rivalrous Anglo-American children jeered at their peers, saying, for example, "I only gave you one. Ha! Ha!" In discussions after the experiment, rivalrous children quite readily explained their behavior. When asked why they chose the side with less absolute gain in Condition 1, children replied, "'Cause I wanted to give Jerry only one," "I wanted her to have less," or "Porque gano (because I win)." Even some five year old children were able to verbalize their rivalrous intents.

As one five year old Anglo-American girl made her choice, she spontaneously exclaimed, "I'm going to give the most ones to me." After the experiment, another five year old Anglo-American girl told the experimenter, "I wanted to have more than her."

The spontaneous comments of the subjects suggest that rivalry may result from two psychologically distinct motives: the motive to lower the outcomes of another and the motive to place oneself above another. 'Giving the most ones to me' is psychologically distinct from 'wanting to give Jerry only one.' Behavior aimed at lowering the outcomes of another represents pure rivalry. Behavior aimed at placing oneself above another represents concern for relative outcomes.

Although concern for relative gains influenced rivalry, it is not responsible for the main cultural difference. The difference between Conditions 1 and 3, which is an estimate of concern for relative outcomes, indicates no significant difference between Anglo-American and Mexican children. Thus it appears that the significant cultural differences are not due to simple attempts of children to obtain more than their peer, but rather to their attempt to lower the outcomes of their peer.

Mexican children may have been more concerned than Anglo-American children about obtaining equality of outcome. The older Mexican children were the only group in Condition 4 with some members who were never rivalrous. Further, almost no Mexican children were rivalrous in Conditions 1 and 2, the other conditions offering equality as an alternative to rivalry. A sensitivity to equality could partially explain the overall cultural difference in rivalry. If a cultural difference in preference for equality does exist, the comparison of Conditions 1 and 3 must be reconsidered. It is possible that the Mexican children were influenced not only by the presence in Condition 3 of a relative loss, but also by the absence in that condition of an equal outcome.

Verbal reports do not allow an unambiguous interpretation of the motivation of the children. After the experiment, non-rivalrous children were shown Condition 4 and they were asked why they had chosen the side with fewer marbles. Although some children were quite consistent in their verbalization of the value of equality, it was not possible in the experimental setting to distinguish explanations from rationalizations. In one case at least, a boy appeared to state the value of equality when it was not meaningful to do so. The subject, a nine year old Mexican, was the second subject in a pair to make his choices. He was non-rivalrous on every trial, even though he followed a boy who had been almost entirely rivalrous. When the non-rivalrous subject was presented with Condition 4 after the experiment, he explained his preference for equality, "Here, (the non-rivalrous side) I could make it two for me and two for him." Although the boy stated equality as a basis for his choices, if he had attempted to even up the over-all score, he would have been rivalrous in Condition 4 because he had received fewer marbles on almost every trial of his partner's choices. Thus the boy's verbal statement of a preference for equality may have been a rationalization of obedience to parental demands or a conditioned avoidance reaction to a potential conflict situation.

In spite of the dramatic cultural differences in rivalry, there is a remarkable similarity in the way children of both cultures are influenced by absolute and relative gains. Comparison of Conditions 1 and 3 indicates that for both cultural groups, holding absolute gains constant, avoidance of a minimal relative loss produces a sizable increase in willingness to be rivalrous. Comparison of Conditions 1 and 2 indicates that for both cultural groups, with direction of relative gains constant, preference for a minimal absolute gain produces only a minimal increase in rivalry.

The results of Condition 4 indicate that when absolute and relative gains both accompany the rivalrous alternative, rivalry is greatest.

The effect of subject order suggests that concern for absolute and relative gains is easily manipulated. Second subjects had received a number of marbles before they began their choices, and they were apparently therefore less concerned than first subjects about losing a marble. Only in Conditions 1 and 3 were the second subjects significantly more rivalrous, and those were the only conditions in which the rivalrous response was accompanied by a loss in absolute outcomes for the chooser. Second subjects showed less difference than first subjects between Conditions 1 and 2 (reflecting less concern about absolute gains) and more difference between Conditions 1 and 3 (reflecting greater concern about relative outcomes).

In both cultures children become increasingly rivalrous with age. The percentage of children always rivalrous indicates this development to be considerably more marked among the Anglo-American children. It is interesting to note, however, that in Condition 2, where there is no loss in absolute gains associated with rivalry, far fewer older than younger Mexicans are never rivalrous. Apparently for the Mexican children there is a considerable increase with age in willingness to be rivalrous some of the time. That the younger children in both cultures were less often always rivalrous and for the most part more often never rivalrous indicates that the lesser rivalry in the younger children is not a function of random choosing.

Anglo-American and not Mexican children develop with age an increasing differentiation of the sexes with regard to rivalry. In both percentage of rivalrous choices per subject and in percentage of rivalrous subjects, among the older but not younger Anglo-American children boys were

significantly more rivalrous than girls. Only in Condition 1 was this sex difference significant on both measures. Apparently by eight years of age Anglo-American boys are more willing than girls to take a loss in absolute gains in order to lower the outcomes of their peer. The older Anglo-American girls were as rivalrous as the boys when rivalry was associated with avoiding a relative loss or obtaining combined relative and absolute gains.

For the older but not younger children of both cultures girls are more concerned with relative than absolute gains whereas boys seem to be about equally influenced by both types of gains. That is, for the older girls but not boys the difference between Conditions 1 and 3 (which reflects a concern for relative outcomes) is greater than the difference between Conditions 1 and 2 (which reflects a concern for absolute gains). This finding is consistent with work demonstrating older girls to be more concerned with relative outcomes and boys to be more oriented toward obtaining the prize (Vinacke & Gullickson, 1964). That boys are more rivalrous than girls while girls tend to be more concerned with relative outcomes is further evidence that rivalry and concern for relative outcomes cannot be equated. Rivalrous children are not concerned simply with obtaining more than their peers; they aim to lower the outcomes of their peers.

Although the present experiment allows us to demonstrate and somewhat define large cultural and developmental differences in rivalry, it does not allow us to determine the origins of the observed differences. The remarkable parallel between the present rivalry findings and previous competition and conflict study findings, however, suggests that for children of Anglo-American and Mexican cultures rivalry is similar to interpersonal conflict. Mexican children avoid conflict and Anglo-American

children enter conflict even when to do so is irrational in terms of their own goals (Kagan & Madsen, In Press). If a rivalry response is functionally equivalent to a conflict or aggressive response, the source of the observed cultural differences may be previously documented differences in child rearing practices. A study of the mothers of six cultures (Minturn & Lambert, 1964) indicates that Mexican and Anglo-American mothers are at opposite ends of aggression and obedience scales: "the mothers of the Mexican sample discourage peer to peer aggression more than any other group and the mother of the United States encourages such aggression more than any other group."

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Table 1

Percentage of Rivalrous Responses, Culture x Age x Sex x Condition

Condition	1		2		3		4	
Age	5-6	8-10	5-6	8-10	5-6	8-10	5-6	8-10
Anglo-American								
Boys	.50	.79	.47	.92	.67	.81	.71	.85
Girls	.23	.42	.44	.46	.40	.73	.73	.71
Mexican								
Boys	.10	.38	.23	.44	.31	.48	.77	.75
Girls	.25	.32	.21	.40	.10	.60	.65	.65

Table 2

Percentage of Always and Never Rivalrous Subjects,

Culture x Age x Condition (sex collapsed)

Condition	1		2		3		4	
Age	5-6	8-10	5-6	8-10	5-6	8-10	5-6	8-10
Anglo-American								
Always Rivalrous	.13	.38	.17	.58	.21	.46	.21	.46
Never Rivalrous	.29	.21	.17	.21	.13	.00	.00	.00
Mexican								
Always Rivalrous	.00	.08	.04	.08	.04	.25	.29	.46
Never Rivalrous	.42	.46	.42	.13	.50	.25	.00	.13

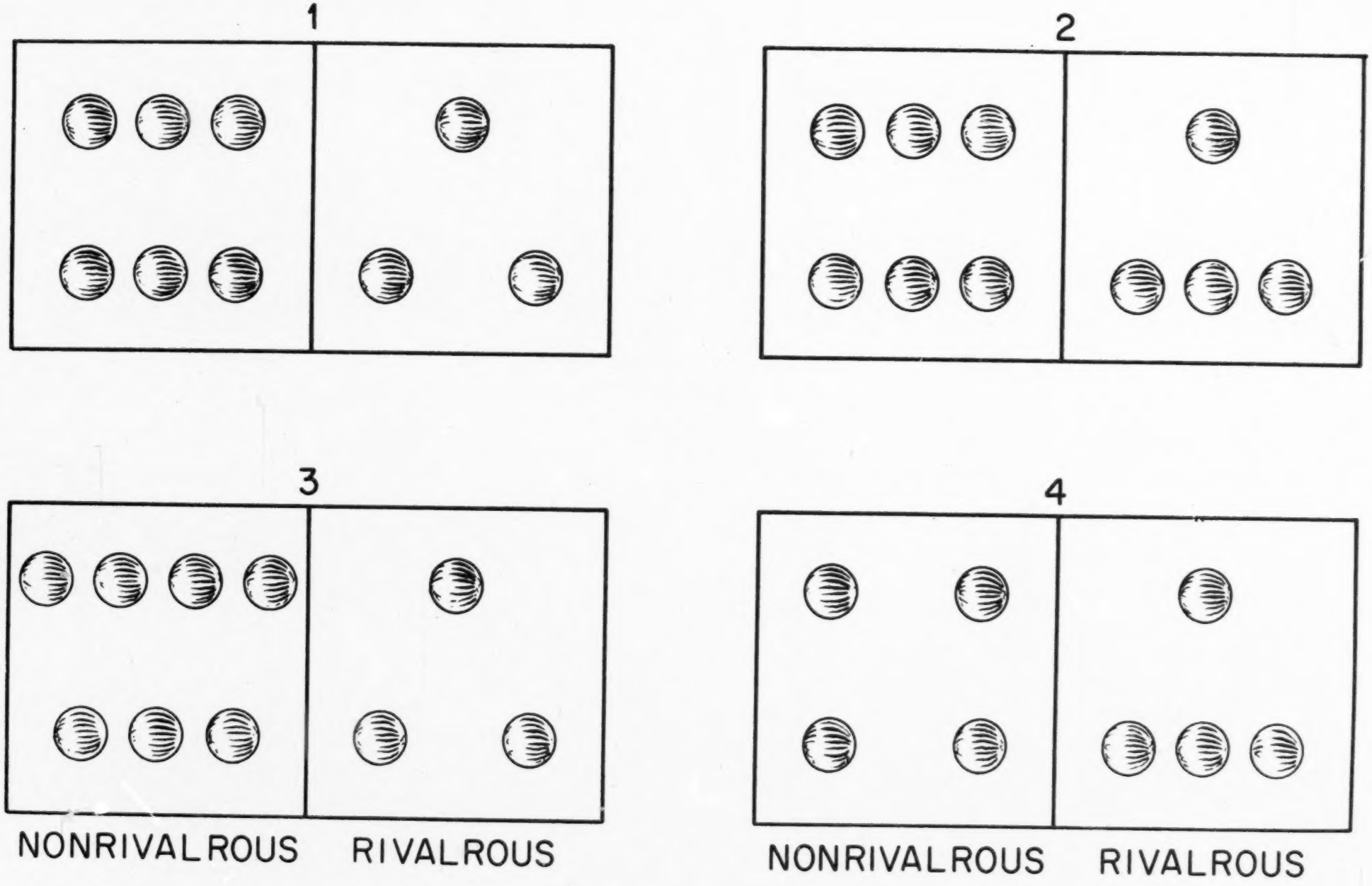

Figure 1. Choice Conditions